NATO OTAN

C4I – M&S Convergence

Opportunities and Challenges for C-BML in NATO

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Report Documentation Page

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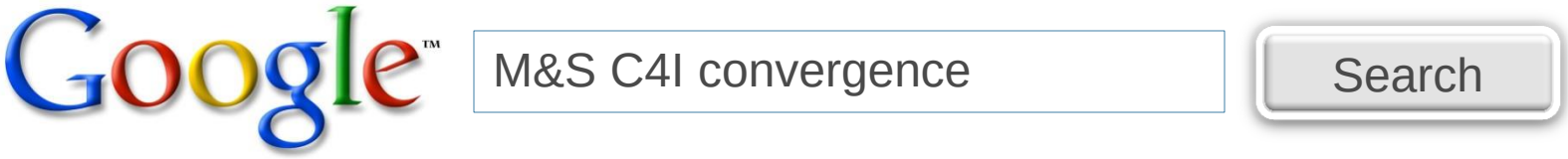
The State of the Art



"Adopting joint": interoperability through **convergence**. – Free …
C4ISR Command Control Communications Computers Intelligence Surveillance and **.....** and user interface software released in 1985 to run on top of **MS**-DOS. **...**

Background

- JC3IEDM ≈ vocabulary, C-BML ≈ language
- Each enables interoperability, but at different levels
- NATO is all about interoperability, based on common vocabulary and common language

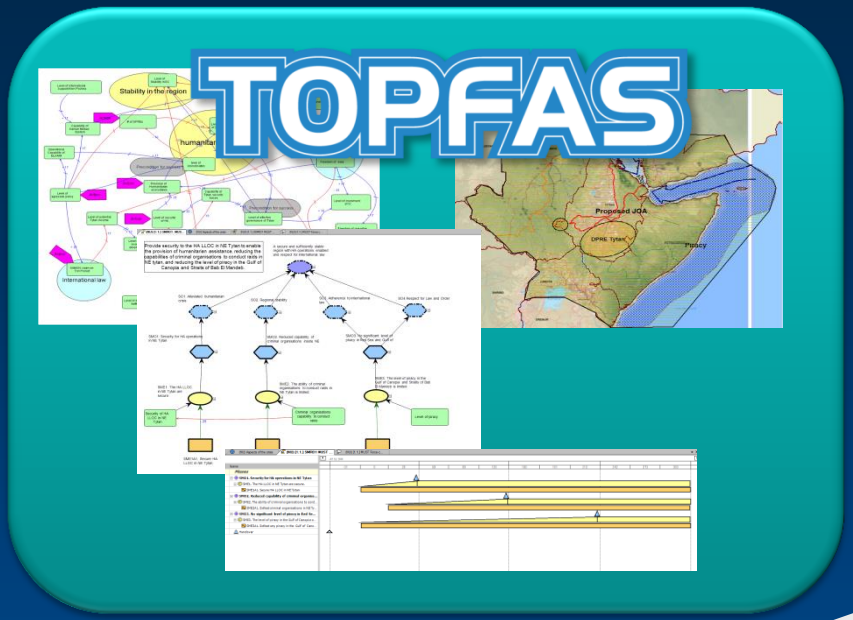
C-BML opportunities

- **Joint operational planning / COAA**
  - Ops Management, ref. MSG-48 demo focus on COA analysis
  - NATO joint planning at operational level (JFC - CC, ISAF HQ - IJC - RC)
- **Training and Exercising**
  - Exercise preparation: scenario data + operational plans → simulation and C2 systems databases (C-BML / MSDL)
  - Exercise management: information exchange between CAX tools, C2-simulation interfaces
- **Joint ISR, collaborative sensor planning**

BML for Joint Planning

- Converting (parts of) the OPLAN from free text to BML
- OPLAN contains Forces, Timings, Locations but Actions are mostly expressed as free text
- Use Force Tasks list to remove ambiguity
- Interface with C2 systems
- Be able to simulate CoAs directly from the plan (no special input needed, the plan design can directly be simulated)

BML and Joint Planning: A practical Example

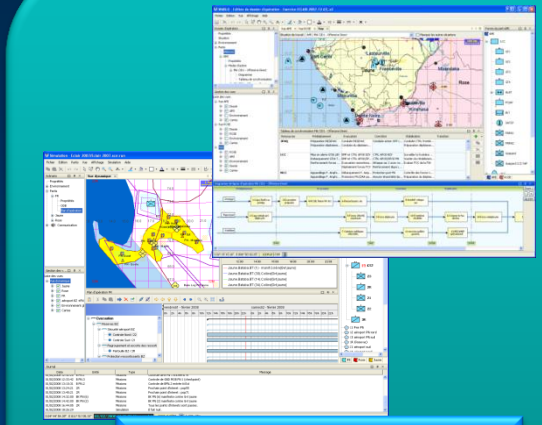


CoA 1

...

CoA n

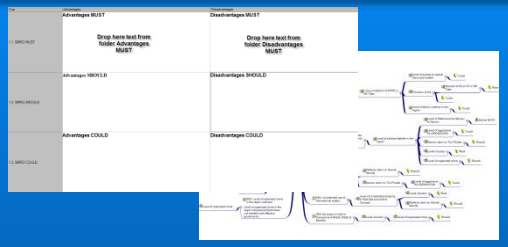
BML



Course of Action Simulations

Objectives, Effects
Synch Matrix : Actions, Timings

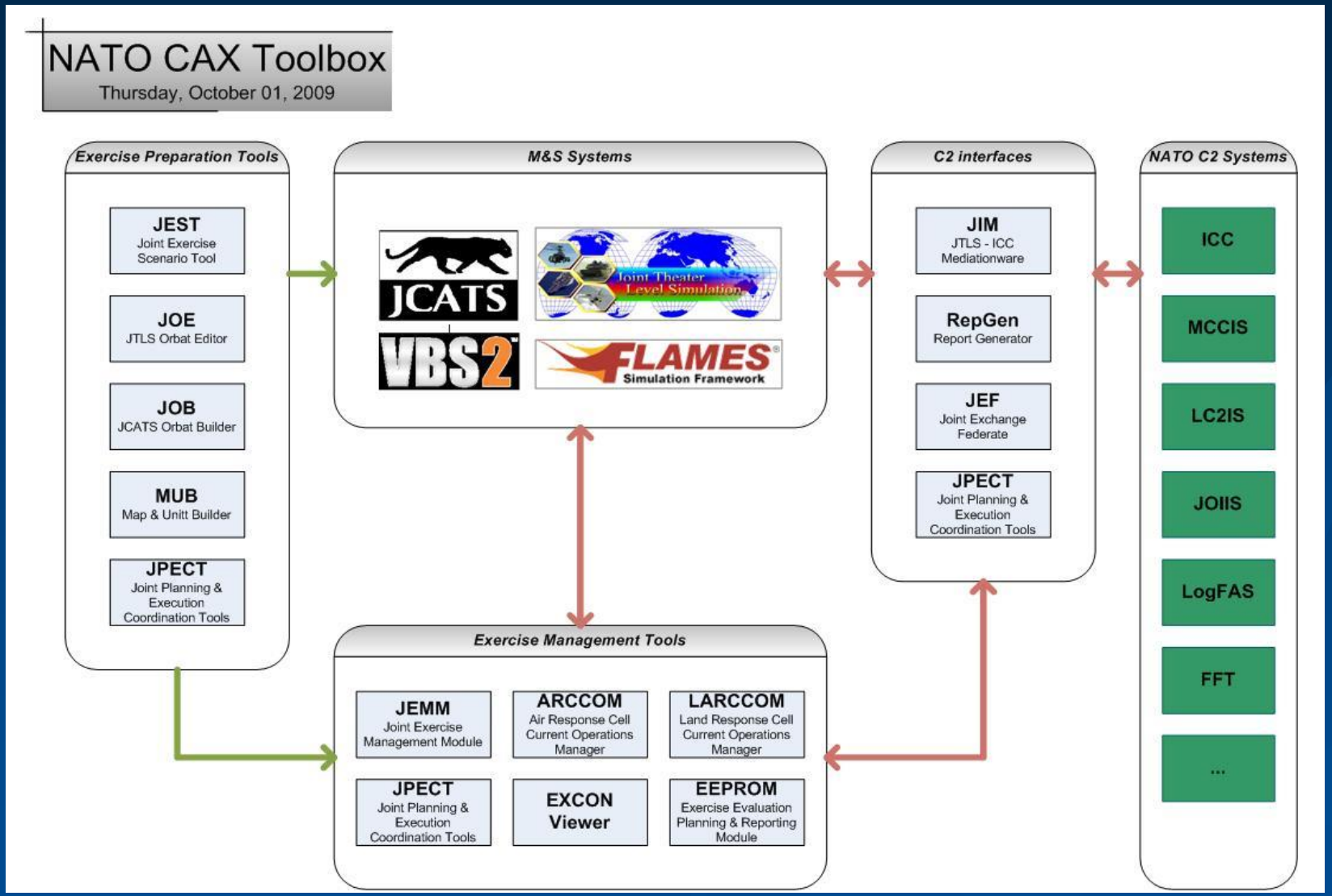
Results/ Comparison



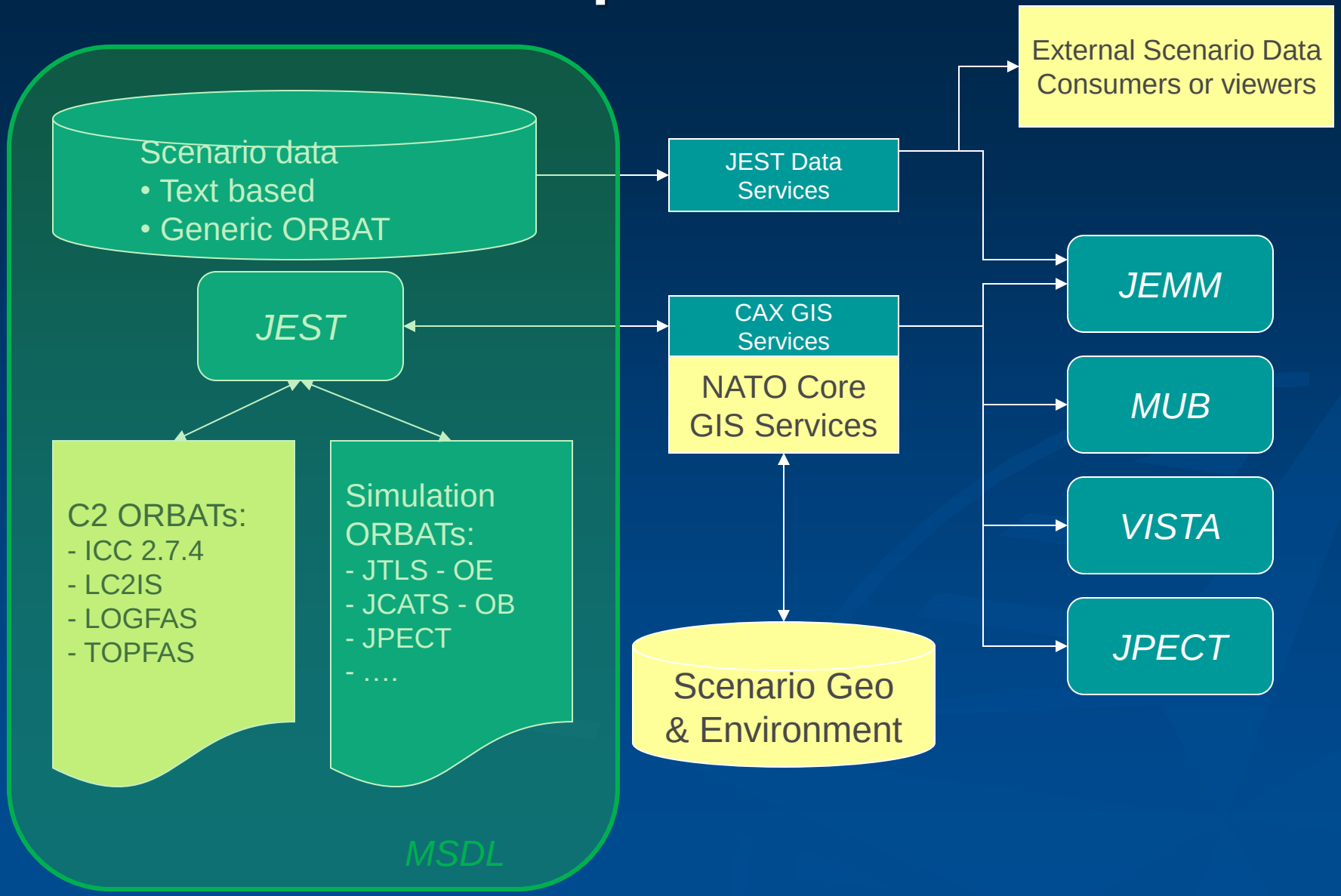
Leveraging MIP based interoperability

- BML defines Plans, Orders, and Reports in a manner that is unambiguous and fully data based
- BML is compatible by design with the JC3IEDM; the few needed extensions are being submitted to the MIP as JC3IEDM change proposals
- BML can be an extension to MIP exchange content
- Systems that already implement MIP interoperability can implement BML extensions as they see fit

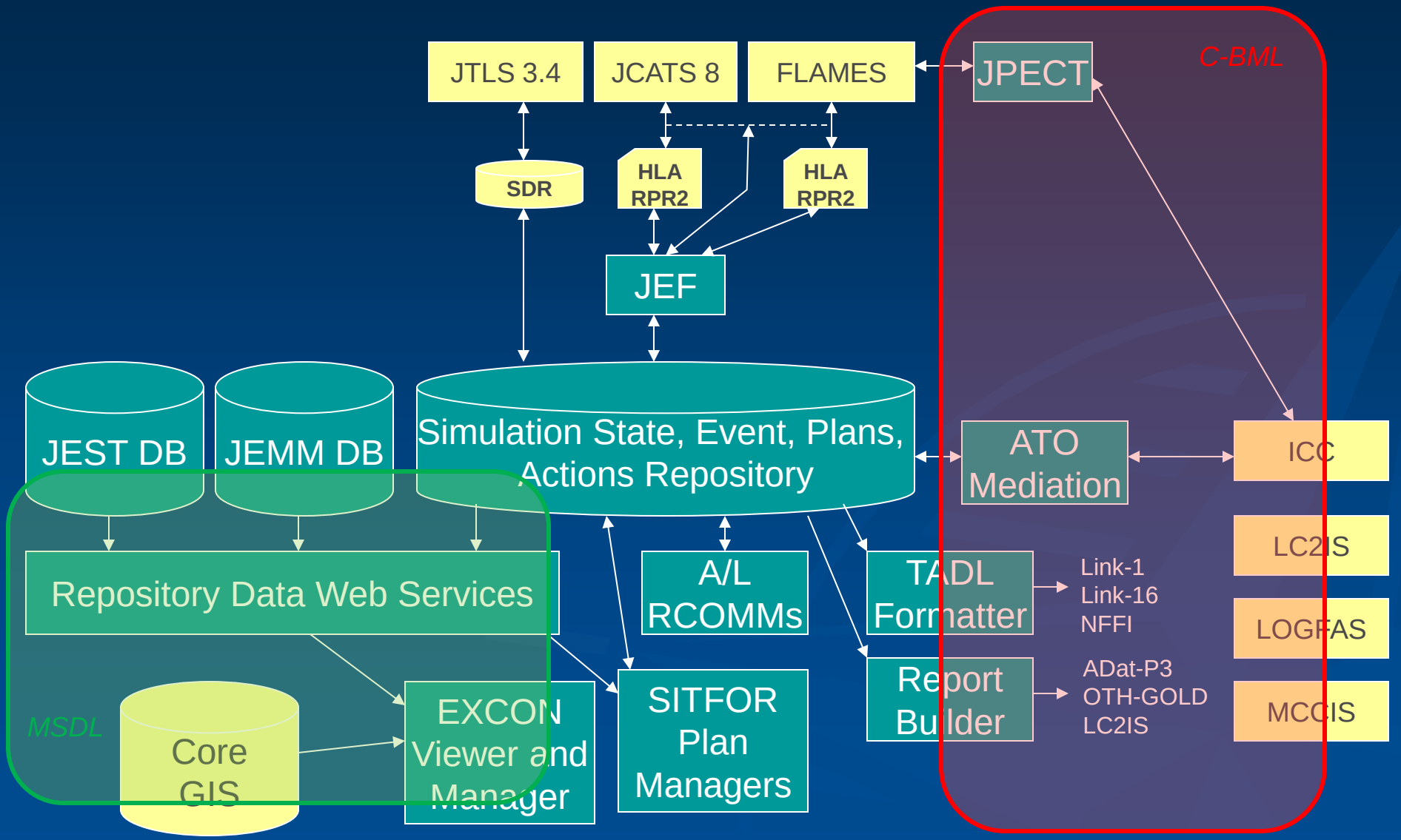
The current NATO CAX toolbox



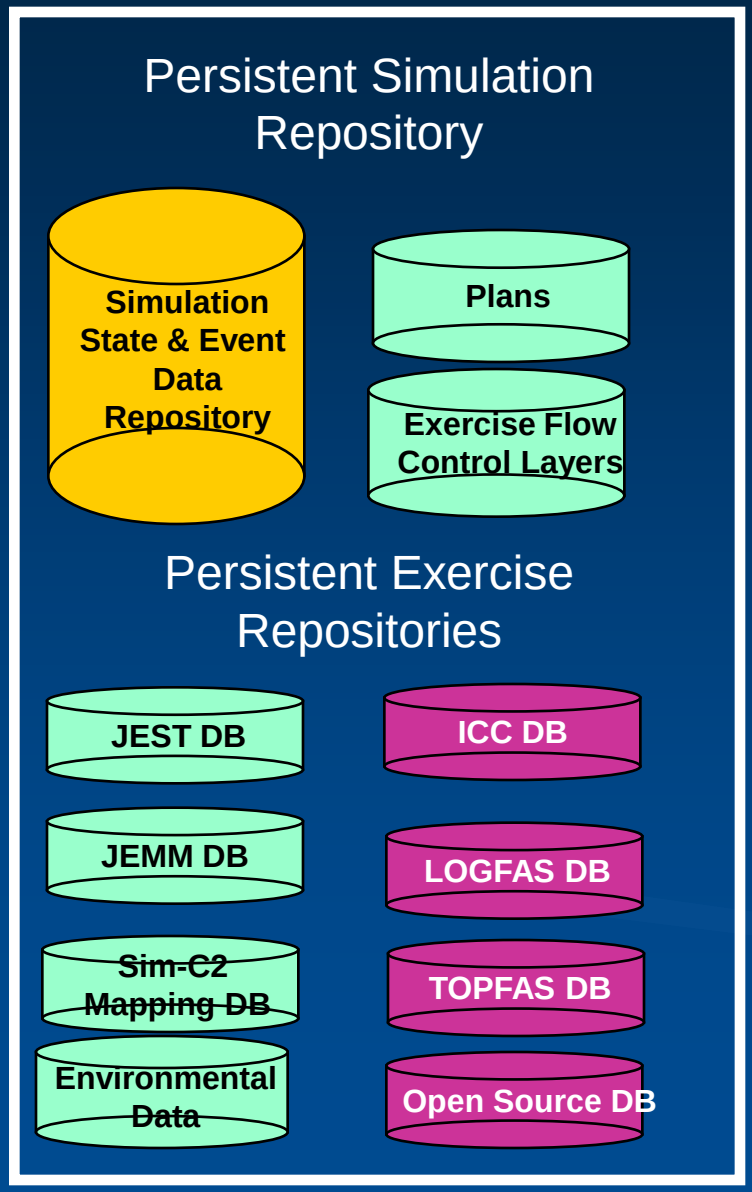
Exercise Preparation

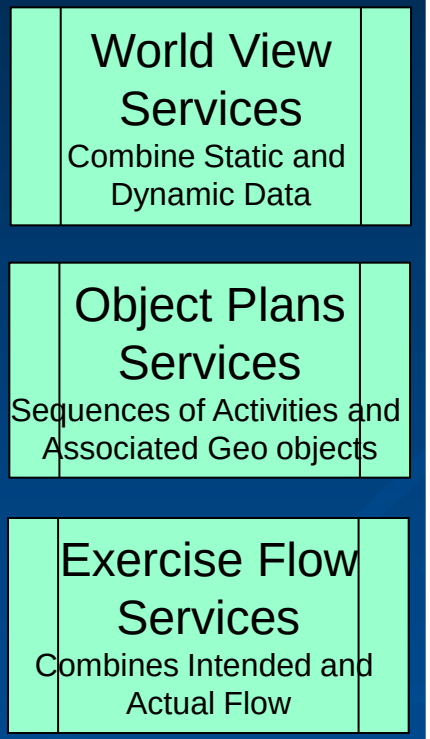


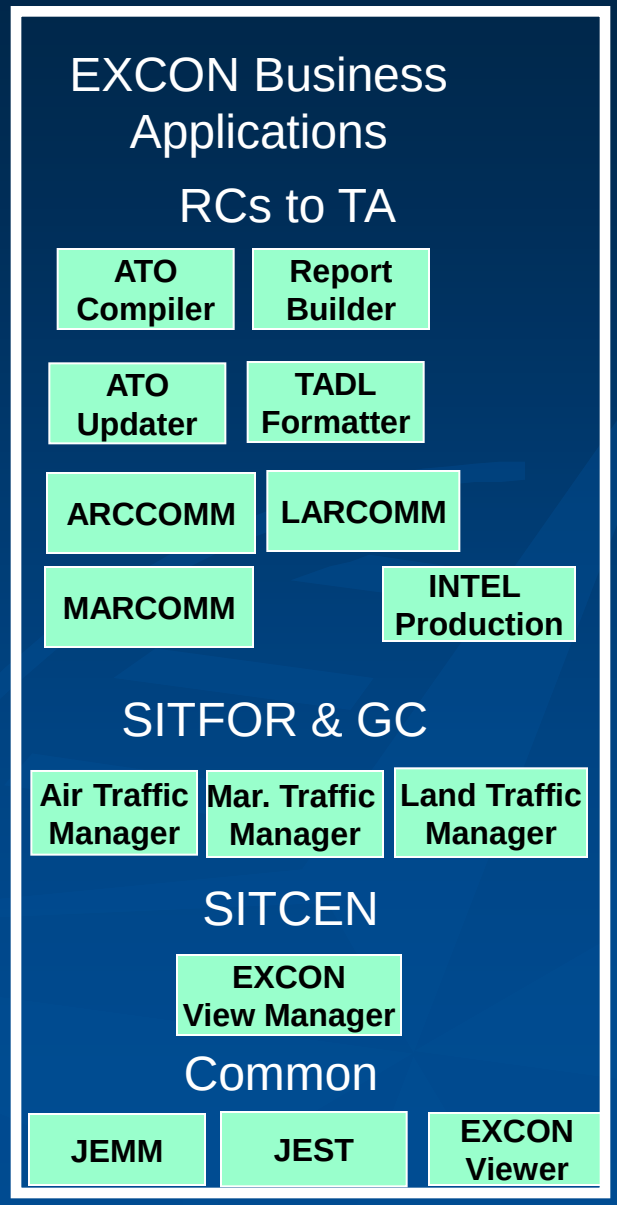
Target CAX Env't Architecture (Proposed)



Exercise Execution







Expected benefits

- **Improved database validation**
  - Against exercise objectives
  - Reflecting NATO force compositions and system capabilities
  - Coherent and consistent across simulations and C2 systems
- **Improved planning in EXCON**
  - More uniform and less ambiguous information exchange
  - Semi-automation of some EXCON planning and execution tasks
- **C2-simulation interoparability**
  - Making C2-simulation interfaces more re-usable (future proofing)

Challenges

- Quantifying expected benefits
- Leverage MIP-based interoperability (NATO investments)
- E&T: keep harmonizing MSDL and C-BML
- Automation/MMI issues: how to enable translation of text and graphics based information into BML and vice versa

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- Mr. Jean-Francois Cosse (Joint Planning, C-BML and MIP in general)
- Dr. Dirk Coppieters (Exercise Preparation and Execution, CAX Architecture)

What?
Just when you think this presentation is terrible, something wonderful happens.
It ends!

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